124. THE LEACHING AND MIGRATION OF A LNAPL CONTAMINANT IN THE UNDERGROUND ENVIRONMENT OF THE TERRACE SEDIMENTS OF THE TARNAVA RIVER, PhD student Tiberiu Doru Cioban, Prof. Dr. Ioan Aurel Irimes, Ioana Madalina Rus, Monica Ilies, Florencia Silaghi, Babes-Bolyai University, Romania............933

125. THE OIL PRODUCTS ACCUMULATION IN BOTTOM SEDIMENTS OF SMALL RIVERS OF KALININGRAD REGION FLOWING INTO THE CURONIAN LAGOON, Elena Demenchuk, Olga Ryabkova, Immanuel Kant Baltic federal university Geography and Geoeconomy Faculty, Russia...........941

126. THE PROTECTED AREA STRONGLY INFLUENCED BY IMPACT OF THE TOURISM IN THE DEMANOVA VALLEY, Dr. Ivana Tomeikova, Dr. Iveta Rakytova, Catholic university in Razomberok, Slovakia..................945

127. THE TREATMENT OF SALTY MINE WATER IN CONSTRUCTED WETLANDS, Ing. Petra Langerova, RNDr. Novakova Jana, Ph.D., Mgr. Meleckova Iva, Ph.D., VSB-Technical University of Ostrava, Czech Republic..................953

128. THE VENTILATION RATE DETERMINATION IN THE OFFICE ROOMS, Peter Kapalo, Florin Domnitae, Eva Krizlova Burdova, Richard Nagy, Martina Rysulova, Technical University of Kosice - Faculty of Civil Engineering, Slovakia..........................961

129. TiO₂ SOLAR LIGHT PHOTOCATALYSIS A PROMISING TREATMENT METHOD FOR WASTEWATER WITH TRINITROTOLUENE CONTENT, Dr. Ines Nitoi, Lucian-Alexandru Constantin, Prof. Dr. Petruta Oancea, Ionut Cristea, Dr. Maria Crisan , National Research and Development Institute for Industrial Ecology - ECOIND, Romania..........................977

130. TOP DOWN STRATEGIES AND BOTTOM UP INITIATIVES IN GEOPARKS DEVELOPMENT IN SLOVAKIA, Roberta Stepanova, Katarina Krstanova, Slovak Agriculture University in Nitra, Slovakia..........................985

131. URANIUM IN AEROSOL OF NUCLEAR FUEL CYCLE ENTERPRISES REGION (NOVOSIBIRSK, RUSSIA), Svetlana Artamonova, Sobolev V.S. Institute of Geology and Mineralogy Siberian Branch of the Russian Academy of Sciences, Russia..........................993

132. URBAN ECOLOGY: ASSESSMENT OF THE POLLUTANTS ACUMULATION IN SEDIMENTS FROM THE COLENTINA LAKES IN BUCHarest, Stanescu Bogdan, Stanescu Elena, Batrinescu Gheorghe, Kim Lidia, Cucureanu Adriana, National Reserach and Development Institute for Industrial Ecology - ECOIND, Romania..........................993

133. USE OF ION EXCHANGE PROCESSES ON WEAK ACID RESINS FOR NICKEL REMOVAL FROM WASTE WATERS, Alexandra Raluca Tiron, PhD.Daniela Elena Pasca, Danu Mariela Orfelet, Simona Caprarescu, Cristina Modrogan, Politehnica University of Bucharest, Romania..........................999

134. USE OF NATURAL RESOURCES FOR SUSTAINABLE DEVELOPMENT AND GLOBALIZATION, Ada Flavia Cristina, Camelia Manescu, Teodor Mateoc, Attila Toth, Nicoleta Mateoc-Sirh, Banat University of Agronomical Sciences and Veterinary Medicine, Romania..........................1007

135. USING THE GEORADAR METHOD (GPR - GROUND PENETRATION RADAR) FOR SEARCHING AND LOCATION OF INACCESSIBLE OR UNKNOWN, HISTORIC UNDERGROUND EXCAVATIONS, PhD Madziarz M., Wroclaw University of Technology Faculty of Geoengineering Mining and Geology, Poland..........................1015

136. VEGETATION, A STABILITY FACTOR IN SLOPE MODELING. CASE STUDY: VULCANAI BA COM MUNE, Lecturer dr. Mihaela Sencovici, Valahia University of Targoviste, Romania..................1023

137. URBAN TRAM INDUCED VIBRATIONS: REALTIME MONITORING OF HISTORICAL BUILDINGS IN THE CENTRE OF ROME, G. Alfaro Degani; Coltrinari, D. Lippiello, Roma Tre University, Italy..........................1031

138. WATER FOOTPRINT, CARBON FOOTPRINT, ENERGY FOOTPRINT GENERAL ASPECTS AND THEIR INFLUENCE ON SOCIETY, Mihaela Pislea, Alina Gheorghe, Cristian Gheorghe, Politehnica University of Timisoara, Romania..........................1039

139. WEB PLATFORM TO IMPROVE THE PUBLIC AWARENESS ON ENVIRONMENTAL MANAGEMENT AND PROTECTION, PhD Vergil Marian Muraru, PhD Cornelia Muraru-Ionel, Math. Petru Cardei, Eng. Raluca Sfiru, Techn. Tania Tieu, INMA Bucharest, Romania..........................1047

140. YIELDING CAPACITY AND QUALITY OF TOMATO FRUITS AT DROP IRRIGATION WITH ELECTROCHEMICALLY ACTIVATED WATER IN LIGHT-CHESTNUT SOILS OF THE LOWER VOLGA REGION, Prof. Dr. Sergey Semenenko, Prof. Dr.Victor Borodychev, Prof. Dr. Elena Ivanitsova, Dr. Michail Lytov, Volgograd State University, Russia..........................1055
ABSTRACT

2,4,6-Trinitrotoluene (TNT) is the most common pollutant identified in wastewater generated from munitions plants where this explosive is synthesized or handled (munitions load, assembly and pack operations). Due to their toxic and suspected carcinogenic characteristics, nitroaromatic compounds like TNT are included on the list of priority pollutants and strictly regulated in EU countries. Since their presence in water bodies is risky for human health and aquatic life, development of powerful, modern treatment methods like photocatalysis are needed in order to assure environmental pollution mitigation.

The photocatalytic degradation of TNT was carried out at pH=7.8, in aqueous TiO\textsubscript{2} based catalyst suspension, under sunlight irradiation. The enhanced photoactivity of catalyst in visible domain was assured by 0.5\% Fe doping.

TNT degradation experiments were performed using a tubular collector type solar photoreactor (26 UV permeable silica glass tubes series connected), plug in a total recycle loops. The influence of substrate concentration and catalyst dose on the pollutant degradation and mineralization by-products (NO\textsubscript{2}, NO\textsubscript{3}, NH\textsubscript{4}) formation efficiencies was studied.

In order to compare the experimental results obtained in various working conditions, the pollutant and mineralization by-products measured concentrations have been considered as functions of irradiation time and cumulative photonic energy \(Q\) incident on the reactor surface (kJ/L).

In the tested experimental conditions, at tens mg/L pollutant concentration, increase of 0.5wtFe\%TiO\textsubscript{2} dose up to 200mg/L leads to the enhancement of TNT degradation efficiency. Since, doubling of TNT content has a negative effect on pollutant degradation efficiency, in similar experimental condition, prolonged irradiation time from 360 to 480 min was necessary in order to assure the compliance of treated effluent with limits imposed by EU legislation (TNT\leq10\mu g/L).

Keywords: Wastewater treatment, TNT, photocatalysis